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JERRY.SHORMA@HP.COM

mkraft@hp.com

ipa.mail@hp.com



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/772,792
Filing Date: February 05, 2004
Appellant(s): CAGLE, PHILLIP C.

Gary Oakeson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/4/08 appealing from the Office action mailed 4/17/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|---------------------------------------|-----------------|---------|
| 5207824 | MAFFATT et al. | 05-1993 |
| 6536890 | KATO et al. | 03-2003 |
| US Pat. Application Pub. 2003/0069329 | KUBOTA et al. | 04-2003 |
| US Pat. Application Pub. 2004/0055508 | MIYAMOTO et al. | 03-2004 |

US Pat. Application Pub. 2004/0063807 KUBOTA et al. 04-2004

US Pat. Application Pub. 2004/0229974 MIYABAYASHI 11-2004

Lewis Sr., Richard J.; Hawley's Condensed Chemical Dictionary 13th Ed., John Wiley & Sons, New York, 1997 (pages 459 and 470).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A. Claims 12-17, 23, 25-31, 37, and 39-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. (U.S. 2004/0063807) in view of the evidence given in Hawley's Condensed Chemical Dictionary.

Wang et al. disclose system for printing images comprising ink jet ink, non-porous substrate such as metal, plastic or glass, thermal printer, and heating element for heating the image once it is printed onto the non-porous substrate. It is disclosed that the ink comprises aqueous liquid vehicle, 10-60% volatile co-solvent having boiling point less than 285 °C, i.e. ethylene glycol methyl ether, propylene glycol methyl ether, triethylene, diethylene, or ethylene glycol (humectant), etc., silicone surfactant or fluorine surfactant, and polymer latex, i.e. acid functionalized polymer colloid particulates, dispersed in the liquid vehicle wherein the polymer is formed from less than 50 mol% hydrophilic monomer such as (meth)acrylic acid and is obtained from crosslinking monomer, i.e. divinylbenzene or trimethylolpropane triacrylate. Given that the polymer is obtained from hydrophilic monomer such as (meth)acrylic acid, it is clear that the polymer would have acid group on its surface. There is no requirement that the ink comprise non-volatile solvent. It is disclosed that the heating element heats the printed image to temperatures of 50-150 °C which includes temperatures that would inherently drive off the

volatile solvent as presently claimed which would inherently improve image permanence as presently claimed. For instance, given that it is well known, as evidenced by Hawley's Condensed Chemical Dictionary (page 470), that ethylene glycol methyl ether has boiling point of 124.5 °C, it is clear that when the image is heated at 50-150 °C, the solvent, i.e. ethylene glycol methyl ether, will be driven off as required in present claim 39. There is also disclosed method of printing an image with good rub resistance comprising ink jetting from the printer the ink onto substrate followed by heating the printed image (paragraphs 7, 14-19, 21, 23 (lines 3-4), 33 (lines 1-5 and last 7 lines), 42-45, 47, 51, 53 (line 4), 54, and 103).

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The newly presented claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these

parameters and the examiner has no way of determining what they are otherwise. The argument that no acid monomer containing latex is exemplified is not persuasive in that the reference is not limited to its examples and is not even required to have examples. Sections [0042]-[0043] encompass the claimed amount of acid monomer. It is not seen that the milling media of section [0024] or the polymeric dispersant of section [0026] does not encapsulate the pigments.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent versus weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited caselaw. The examiner notes MPEP 2112. "No more than" still encompasses 0 in the instant claims 13-14 and 27-28. The appellant's arguments have been fully considered but do not overcome the rejection above for the reasons stated above. This rejection is therefore maintained.

B. Claims 12-17, 23, 25-31, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. 2004/0063807) in view of the evidence given in Hawley's Condensed Chemical Dictionary.

Wang et al. disclose system for printing images comprising ink jet ink, non-porous substrate such as metal, plastic or glass, thermal printer, and heating element for heating the image once it is printed onto the non-porous substrate. It is disclosed that the ink comprises aqueous liquid vehicle, 10-60% volatile cosolvent having boiling point less than 285 °C, i.e. ethylene glycol methyl ether, propylene glycol methyl ether, triethylene, diethylene, or ethylene glycol (humectant), etc., silicone surfactant or fluorine surfactant, and polymer latex, i.e. acid functionalized polymer colloid particulates, dispersed in the liquid vehicle wherein the polymer is formed from less than 50 mol% hydrophilic monomer such as (meth)acrylic acid and is obtained from crosslinking monomer, i.e. divinylbenzene or trimethylolpropane triacrylate. Given that the polymer is obtained from hydrophilic monomer such as (meth)acrylic acid, it is clear that the polymer would have acid group on its surface. There is no requirement that the ink comprise non-volatile solvent. It is disclosed that the heating element heats the printed image to temperatures of 50-150 °C which includes temperatures that would inherently drive off the volatile solvent as presently claimed which would inherently improve image permanence as presently claimed. For instance, given that it is well known, as evidenced by Hawley's Condensed Chemical Dictionary (page 470), that ethylene glycol methyl ether has boiling point of 124.5 °C, it is clear that when the image is heated at 50-150 °C, the solvent, i.e. ethylene glycol methyl ether, will be driven off as required in present claim 39. There is also disclosed method of printing an image with good rub resistance comprising ink jetting from the printer the ink onto substrate followed by heating the printed image (paragraphs 7, 14-19, 21, 23 (lines 3-4), 33 (lines 1-5 and last 7 lines), 42-45, 47, 51, 53 (line 4), 54, and 103). In light of the above, it is clear that Wang et al. anticipates the present claims. The recitations regarding surface acid

groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The newly presented claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise. The argument that no acid monomer containing latex is exemplified is not persuasive in that the reference is not limited to its examples and is not even required to have examples. Sections [0042]-[0043] encompass the claimed amount of acid monomer. It is not seen that the milling media of section [0024] or the polymeric dispersant of section [0026] does not encapsulate the pigments.

It would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed combinations of ingredients in the ink of Wang because they are encompassed by Wang, as discussed above, and would have been expected to

give the printing system of Wang and its disclosed properties. No unexpected results are seen which are commensurate in scope with the instant claims and the cited prior art.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent verses weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited caselaw. The examiner notes MPEP 2112. "No more than" still encompasses 0 in the instant claims 13-14 and 27-28.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391. Appellant's assertion that this rejection negates the 102 above are meritless since anticipation is the ultimate in obviousness and the appellant's representative is undoubtedly aware that one may present alternative legal theories without undermining the other. This caselaw is superior to that cited by the appellant. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other

similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112.

The appellant's arguments have been fully considered but do not overcome the rejection above for the reasons stated above. This rejection is therefore maintained.

C. Claims 12-16, 18, 23, 25-30, 32, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. 2004/0063807) in view of Miyabayashi (U.S. 2004/0229974).

The disclosure/rejection with respect to Wang et al. in paragraph 3 above is incorporated here by reference.

The difference between Wang et al. and the present claimed invention is the requirement in the claims of specific amount of crosslinking monomer.

Wang et al. disclose that the polymer is obtained from crosslinking monomer, however, there is no disclosure of the amount of crosslinking monomer utilized.

Miyabayashi, which is drawn to ink jet ink, discloses the use of polymer fine particles in the form of resin emulsion, i.e. acid functionalized polymer colloid particulates, where the resin has acid groups on its surface and is formed from 1-10% acid monomer and 0.2-4% crosslinking monomer wherein the motivation for using 0.2-4% crosslinking monomer is in order to improve ejection stability (paragraph 334-336 and 354).

In light of the motivation for using specific amount of crosslinking monomer disclosed by Miyabayashi as described above, it therefore would have been obvious to one of ordinary skill in the art to utilize polymer obtained from that amount of crosslinking monomer in the ink of Wang

et al. in order to produce ink with improved ejection stability, and thereby arrive at the claimed invention.

Appellant's argument regarding the instantly claimed encapsulated pigment with the instantly claimed acid containing polymer is addressed in paragraph 3 above. The examiner's arguments in this regard also apply here. Wang encompasses the combination, as discussed in paragraph 3 above.

The appellant has shown no unexpected results stemming from the instantly claimed combinations of ingredients in a manner commensurate in scope with the cited prior art and the instant claims.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent verses weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited caselaw. The examiner notes MPEP 2112. "No more than" still encompasses 0 in the instant claims 13-14 and 27-28.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391. Appellant's assertion that this rejection negates the 102 above are meritless since anticipation is the ultimate in obviousness and the appellant's representative is undoubtedly aware that one may present alternative legal theories without undermining the other. This caselaw is superior to that cited by the appellant. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112.

The appellant's arguments have been fully considered but do not overcome the rejection above for the reasons stated above. This rejection is therefore maintained.

D. Claims 12-15, 17-18, 23, 25-29, 31-32, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (U.S. 2003/0069329) in view of Hawley's Condensed Chemical Dictionary and either Kato et al. (U.S. 6,536,890) or Moffatt et al. (U.S. 5,207,824).

Kubota et al. disclose system for printing images comprising ink jet ink, ink jet printer, non-porous substrate, and heating element. It is disclosed that the ink jet ink comprises aqueous liquid vehicle comprising 0.5-40% volatile co-solvent having boiling point below 285 °C, i.e. ethanol, diethylene glycol (humectant), etc., resin emulsion, i.e. acid functionalized polymer colloidal particulates, dispersed in the liquid vehicle where the resin has functional groups on its surface including carboxyl groups and is formed from 0.2-4% crosslinking monomer, and pigment dispersed in the liquid vehicle wherein the pigment is polymer encapsulated pigment. There is no requirement that the ink comprise non-volatile solvent. Given that it is well known,

as evidenced by Hawley's Condensed Chemical Dictionary (page 459), that ethanol has boiling point of 78.3 °C, it is clear that when the image is heated at 80 °C, the solvent, i.e. ethanol, will be driven off as required in present claim 39. There is also disclosed method wherein the ink is ejected onto non-porous substrate such as glass, plastic, or coated paper from printer followed by heating the printed image at 80 °C (paragraphs 24-29, 36, 40, 72, 80-81, 101-102, 112-113, 115 (lines 1-4), 117, 166-167, 178, 228-230, 253, 263-264-550-551, 555-558, and 565). Attention is drawn to Ink 4 in Table F2 which discloses ink comprising polymer encapsulated pigment, resin emulsion wherein the resin is obtained from 3% acid monomer and 0.4% crosslinking monomer, and volatile solvent having boiling point below 285 °C, i.e. glycerin, diethylene glycol, and N-methyl-2-pyrrolidone, and to Table F5 which discloses that such ink has good rub resistance

The difference between Kubota et al. and the present claimed invention is the requirement in the claims of the use of thermal ink jet printer.

Kubota et al. discloses the use of ink jet printer, however, there is no specific disclosure of thermal ink jet printer.

Kato et al., which is drawn to ink jet ink, disclose the use of thermal ink jet printer wherein the ink is ejected on stable basis with no satellite dots produced (col.26, lines 19-25).

Alternatively, Moffatt et al., which is drawn to ink jet ink, disclose the use of thermal ink jet printer given that this printer offers a low cost, high print quality, comparatively noise-free option to other types of printers (col. 1, lines 12-14).

In light of the motivation for using thermal ink jet printer disclosed by Kato et al. or Moffatt et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such printer as the printer in Kubota et al. in order to stably print ink and produce no satellite dots or alternatively, in order to print noise free with low cost and high print quality, and thereby arrive at the claimed invention.

Specifically, appellant argues that Kubota et al. fails to disclose printing ink jet ink comprising polymer encapsulated pigment and acid functionalized colloid particulates dispersed in liquid vehicle having volatile co-solvent wherein the image is heated after printing. As evidence to support this position, appellant points to examples of Kubota et al. that show ink comprising polymer encapsulated pigment but wherein such ink is not heated after printing or that show ink that is heated after printing but wherein the ink does not comprise polymer encapsulated pigment.

However, the examples are but a few preferred embodiments of Kubota et al. It is noted, "appellant must look to the whole reference for what it teaches. Appellant cannot merely rely on the examples and argue that the reference did not teach others," In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). Further, "non-preferred disclosures can be used. A non-preferred portion of a reference disclosure is just as significant as the preferred portion in assessing the patentability of claims", In re Nehrenberg, 280 F.2d 161,126 USPQ 383 (CCPA 1960). A fair reading of Kubota et al. as a whole clearly discloses ink comprising polymer encapsulated pigment (paragraph 72), acid functionalized colloid particles (paragraphs 102, 112, and 117), and liquid vehicle (paragraphs 162-168) as presently claimed wherein the image formed from such ink is heated after printing (paragraphs 35 and 230).

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The newly presented claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391.

The section of Kato relied on to rebut its use above shows clearly that it is within the ability of the ordinary skilled artisan to determine when thermal printing is possible and why to do it. The argued disclosure of Kato is therefore taken as supporting this rejection rather than rebutting it. This argument is therefore not persuasive. The rationale regarding no satellite dots seems to

be motivation, contrary to the appellant's arguments that there is not reason to combine Kato with Kubota. Impermissible hindsight and circular logic are not used, contrary to the appellant's arguments. Note KSR, cited above, in this regard also. The above logic is sufficient to rebut the appellant's remaining arguments on this issue. Kato clearly shows that the argued "greater care" is within the ability of the ordinary skilled artisan to do and determine. The benefit is clearly worth the effort given the desirability of clear printed images. Given the similarities of the compositions discussed above to those of the instant claims, it is expected that the instantly claimed parameters are necessarily inherent to the prior art compositions discussed above. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112. Claims 13-14, 27-28, and 41-44 recite "no more than" which encompasses 0.

The appellant's arguments have been fully considered but are rebutted by the above statements and the disclosures of the cited prior art. This rejection is therefore maintained.

E. Claims 12-16, 18, 23, 25-30, 32, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. in view of Hawley's Condensed Chemical Dictionary and either Kato et al. or Moffatt et al. as applied to claims 12-15, 17-18, 23, 25-29, 31-32, 37, and 39-40 above, and further in view of either Miyamoto et al. (U.S. 2004/0055508) or Wang et al. (U.S. 2004/0063807).

The difference between Kubota et al. in view of Hawley's Condensed Chemical Dictionary and either Kato et al. or Moffatt et al. and the present claimed invention is the requirement in the

claims of silicone surfactant or fluorine surfactant.

Miyamoto et al., which is drawn to ink jet ink disclose the use of silicone as anti-foaming agent to prevent bubbles from being generated in the ink and/or allowing generated bubbles to disappear (paragraphs 183-184).

Alternatively, Wang et al., which is drawn to ink jet ink, disclose the use of silicone surfactant or fluorinated surfactant in order to control surface tension and thus, the jet velocity, separation length of droplets, drop size, and stream stability of the ink (paragraph 46).

In light of the motivation for using silicone surfactant or fluorinated surfactant disclosed by Miyamoto et al. or Wang et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such surfactant in the ink of Kubota et al. in order to produce ink with no foaming or, alternatively, to produce ink with suitable surface tension, and thereby arrive at the claimed invention.

Specifically, appellant argues that Kubota et al. fails to disclose printing ink jet ink comprising polymer encapsulated pigment and acid functionalized colloid particulates dispersed in liquid vehicle having volatile co-solvent wherein the image is heated after printing. As evidence to support this position, appellant points to examples of Kubota et al. that show ink comprising polymer encapsulated pigment but wherein such ink is not heated after printing or that show ink that is heated after printing but wherein the ink does not comprise polymer encapsulated pigment.

However, the examples are but a few preferred embodiments of Kubota et al. It is noted, "appellant must look to the whole reference for what it teaches. Appellant cannot merely rely on the examples and argue that the reference did not teach others," In re Courtright, 377 F.2d 647,

153 USPQ 735,739 (CCPA 1967). Further, "non-preferred disclosures can be used. A nonpreferred portion of a reference disclosure is just as significant as the preferred portion in assessing the patentability of claims", *In re Nehrenberg*, 280 F.2d 161, 126 USPQ 383 (CCPA 1960). A fair reading of Kubota et al. as a whole clearly discloses ink comprising polymer encapsulated pigment (paragraph 72), acid functionalized colloid particles (paragraphs 102, 112, and 117), and liquid vehicle (paragraphs 162-168) as presently claimed wherein the image formed from such ink is heated after printing (paragraphs 35 and 230).

Appellant also argues that there is no motivation to combine Kubota et al. with Kato et al. given that, as disclosed on page 14, line 30-page 15, line 6 of the present specification, configuring a system including a thermal ink jet ink architecture often requires additional consideration and experimentation of at least selection of ink components. Appellant argues that Kato et al. also disclose the difficulty of working with thermal ink jet architecture.

However, while the present specification discloses that polymer colloid particulates effective for use in piezo ink jet system are not necessarily effective in thermal ink jet systems, firstly, it is noted that given that Kubota et al. disclose ink jet ink identical to that presently claimed, it would have been obvious to one of ordinary skill in the art that such ink would also be suitable for use in thermal ink jet printer as presently claimed. Secondly, it is noted that there is no requirement in Kubota et al. that the ink is suitable for use in piezo ink jet system and thus, one of ordinary skill in the art would not expect that such ink would not be suitable for use in thermal ink jet system. Additionally, while coi.26, lines 25-28 of Kato et al. disclose that when the ink is used with an ink jet printing method, thermal properties of the ink may have to be

regulated, this does not teach against using inks in thermal ink jet system only that they have to be regulated.

While it is agreed that Kato et al. disclose the use of separate liquid composition and ink, however, Kato et al. disclose the use of the ink in a thermal printer and further, the teaching of Kato et al. with respect to the thermal printer, "ink-jet recording method of the type adapted to eject ink by utilizing the foaming phenomenon of ink arises when thermal energy is applied hereto because ink is ejected on a stable basis and no satellite droplets will be produced", appears to refer to the printing apparatus itself not the ink. That is, it is the printer which allows the ink to be ejected on a stable basis and for no satellite drops to be produced. Therefore, it would have been obvious to one of ordinary skill in the art to utilize ink, including that disclosed by Kubota et al., in such thermal ink jet printer, in order to stably print ink and produce no satellite dots, and thereby arrive at the claimed invention.

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The newly presented claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined

claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391.

The section of Kato relied on to rebut its use above shows clearly that it is within the ability of the ordinary skilled artisan to determine when thermal printing is possible and why to do it. The argued disclosure of Kato is therefore taken as supporting this rejection rather than rebutting it. This argument is therefore not persuasive. The rationale regarding no satellite dots seems to be motivation, contrary to the appellant's arguments that there is not reason to combine Kato with Kubota. Impermissible hindsight and circular logic are not used, contrary to the appellant's arguments. Note KSR, cited above, in this regard also. The above logic is sufficient to rebut the appellant's remaining arguments on this issue. Kato clearly shows that the argued "greater care" is within the ability of the ordinary skilled artisan to do and determine. The benefit is clearly worth the effort given the desirability of clear printed images. Given the similarities of the compositions discussed above to those of the cited prior art, it is expected that the instantly claimed parameters are necessarily inherent to the prior art compositions discussed above. There is no probative evidence that those parameters are not necessarily inherent to the instantly

claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112. Claims 13-14, 27-28, and 41-44 recite “no more than” which encompasses 0.

The appellant’s arguments have been fully considered but are rebutted by the above statements and the disclosures of the cited prior art. This rejection is therefore maintained.

(10) Response to Argument

A. The following is in response to appellant’s arguments regarding the rejection of paragraph 9(A) above:

Case law argued by the appellants stating what is required of an anticipation rejection is noted and the requirements thereof are met in the rejection of paragraph 9(A) above.

The appellant’s argument that Wang does not exemplify the instantly claimed pigment cannot be persuasive. The disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer encapsulated pigment colorants as noted in paragraph 9(A) above and in the appellant’s arguments regarding the disclosure of Wang. Appellant’s argument that the disclosed list of pigments are not encapsulated does not remedy the fact that the prior art discloses encapsulated pigments and dispersant encapsulates the pigment by its dispersing action. Where the dispersant is polymeric (paragraph [0026] of prior art), this also meets the instantly claimed encapsulated pigment. Thus a sufficiently disclosed large part of the pigments of the prior art anticipate those of the instant claims, as noted above.

The appellant argues that acid monomer containing latex is not exemplified. Again, the disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer which may contain the instantly claimed content of acid functional monomer. The equilibrium between hydrophilic COOH and water dictates that the acid groups will be present at the water polymer interface, i.e. at the surface of the polymer particles in dispersion. There is not probative evidence to the contrary. Paragraph [0033] of Wang discloses acid functional monomers at line 10 thereof and paragraph [0042] discloses the instantly claimed amount thereof. All should understand that "hydrophilic" means and encompasses the acid functional monomers disclosed in paragraph [0033], particularly in view of the first 3 lines of paragraph [0043]. Thus, the cited prior art discloses the instantly claimed acid functional polymer with sufficient specificity so as to anticipate it. The mole percent of the prior art clearly overlaps the instantly claimed weight percent given the relationship of moles and weight. The appellant's arguments in this regard are therefore incorrect.

Appellant's statements regarding dependence of claims 1 and 26 of page 16, section ii of their brief appears to be in error. Claim 1 has been cancelled and claim 12 does not depend from claim 26. The appellant argues that Wang lists 26 hydrophilic monomers of which only 4 are acidic. The first four are acidic. Acid monomers being listed first, typically used to give hydrophilic polymers most often in the entirety of aqueous polymer art, and being such a large percentage of the disclosed group meets the requirement that their disclosure is with sufficient specificity so as to anticipate the use of acid functional monomers. It is further noted that the ammonium and sodium acrylates/methacrylates are salts of such acidic monomers that give

similar dispersing affects. The instant claims recite open language and therefore do not exclude bases, which necessarily give these salts of the instantly claimed polymers. The argument that there is not a teaching to use the instantly claimed acid functional polymer and encapsulated pigment in Wang's ink is rebutted by the fact that the reference teaches each of these with sufficient specificity so as to anticipate their individual use in the ink of Wang, that use being simultaneously or separately. The rejection does not rely on inherency of using the instantly claimed pigment and acid functional polymer in Wang. The examiner knows of no such case law sanctioning such use of inherency. The instant rejection relies on the fact that the prior art teaches each of these instances of polymer and pigment in their inks, the individual instances are relatively large portions of the disclosed polymers and pigments, and therefore the simultaneous use of each of the above discussed encapsulated pigments and acid functional polymers of the instant claims is taught with sufficient specificity so as to anticipate the instantly claimed use thereof. The appellant's arguments relating to inherency in this regard are therefore mistaken. The cited caselaw does not apply to this situation either since the examiner's rejection relies on the prior art's disclosure of acid functional polymer and encapsulated pigment by Wang for use in the inks of Wang, not inherency thereof. The examiner knows of no legal basis for such use of "inherency" and did not use inherency in this instance.

The examiner does not rely on Wang's explicit disclosure of hydrophilic monomers to arrive at the use of acidic monomers according to the instant claims. As clearly seen in the above rejection, the examiner relies on Wang's disclosure of the instantly claimed amounts of the instantly claimed acidic monomers disclosed by Wang. The above rejection has provided the instantly claimed combination of elements for the reasons stated in paragraph 9(A) above and in

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this paragraph. Wang's disclosure relating to encapsulated pigments, which is discussed in detail in paragraph 9(A) above, is not limited to paragraph [0029]. See the entire disclosure of Wang in this regard noted in paragraph 9(A) above. The argument that the examiner is picking and choosing discrete, briefly mentioned possibilities and combining them in a manner not specifically taught by Wang, while more applicable than the above noted inherency argument, is incorrect because at least one third of the pigments disclosed by Wang are encapsulated (really more when the encapsulation by polymeric dispersants and grinding aids noted above are factored correctly) and the acid containing polymer is disclosed with sufficient specificity so as to anticipate its use for the reasons stated above and it is a rather large portion of the discussed hydrophilic polymers to which Wang devotes a great amount of disclosure. The skilled artisan does not read Wang with the untrained eye as the appellant's representative would have us do. The skilled artisan understands what contribution' to stability acid functional monomers give the polymer of Wang and knows that acid functional polymer is the most often used means for stabilizing vinyl polymers in water, which is why Wang listed the acid functional hydrophiles first, and the ordinary skilled artisan understands the reasons one would use encapsulated pigment so that it can be more compatible with the binder of the ink than its natural surface would be, which is why Wang noted as only one of three options the use of encapsulated pigments and the ordinary skilled artisan in this art is of sufficient level of skill that they can add these facts together such that the disclosure of Wang anticipates the simultaneous use of encapsulated pigment and acid functional polymer of the instant claims. The appellant would have us use only very specific exemplified teachings to give anticipation, which the case law regarding anticipation clearly does not require.

The appellant's argument that the examiner's response to their arguments of page 18 of the appellant's brief amounts to equating hydrophilic monomers with acidic monomers is not correct. The examiner has equated the acidic monomers specifically taught by Wang to acidic monomers, as clearly set forth in the rejection of paragraph 9(A) above and in this paragraph and more importantly in the cited disclosure of Wang that discloses the use of the instantly claimed amounts of acid monomers. The reason to pick acid monomers is set forth above. The combination of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims are disclosed with sufficient specificity so as to be anticipated individually and in combination by Wang for the reasons stated above. It does not require too much picking and choosing to arrive at the instantly claimed inventions, nor any picking and choosing when the disclosure of Wang is read by the skilled artisan, from the disclosure of Wang, which discloses each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims as large portions of relatively small groups, from which the skilled artisan would understand why one would choose each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims. The disclosure of Wang does not exist in a vacuum. See *In re Arkley* and *In re Petering* regarding picking and choosing. An anticipating reference is not required to specify the anticipated material in a particular form, including the argued table, figure, etc. The text and general disclosure of Wang is taken as anticipating the instant claims for the reasons stated in paragraph 9(A) and in this paragraph however.

The appellant's arguments relating to the instant claims 41-44 ignore the inherency statement in regard to these claimed limitations. The instantly claimed densities appear typical of most organic compounds. The polymers of the instant claims appear to be those of Wang. Therefore the density of the polymers of Wang that fall within the scope of the instant claims, discussed above, are expected to have the densities typical of such polymers, i.e. those of the instant claims 41 and 43. Similar arguments apply to the instant claims 42 and 44. Specifically, the polymers of Wang appear to be similar to those of the instant claims, particularly where they have the instantly claimed acid content, preferred by Wang as noted above, which materially affects surface dielectric constant of the broad range of the instant claims. See MPEP 2112. There is no probative evidence that the limitations of the instant claims 41-44 are not inherently possessed by the polymers of Wang cited above. The appellant is correct that the rejection of claims 41-44 relies on inherency. The instant situation meets the case law regarding inherency for the reasons stated above. Applicant's contention that these parameters of the instant claims 41-44 are not inherent to the polymers of Wang discussed above is not supported by probative evidence. The examiner relies on first listed acid monomers and preferred amounts thereof, which anticipates the instantly claimed polymers having acid functional groups.

Arguments relating to the instant claims 13-14 and 27-28 as requiring non-volatile solvent ignores MPEP 2173.05(c), particularly "Some terms have been determined to have the following meanings in the factual situations

of the reported cases: the term "up to" includes zero as a lower limit, *In re Mochel*, 470 F.2d 638, 176 USPQ 194 (CCPA 1974); and "a moisture content of not more than 70% by weight" reads on dry material, *Ex parte Khusid*, 174 USPQ 59 (Bd. App.

1971)." which situations are analogous to the instant claim language "comprises a non-volatile co-solvent in an amount of no more than ...", which is correctly interpreted as encompassing 0% of the non-volatile co-solvent. The appellant's arguments in this regard are therefore not correct. The appellant's interpretation of "comprises" or "further comprises" is inconsistent with the case law on this issue.

The rejection of paragraph 9(A) above should therefore be affirmed.

B. The following is in response to appellant's arguments regarding the rejection of paragraph 9(B) above:

Appellant's arguments regarding what is required of an obviousness rejection are noted. Furthermore, MPEP 2141, particularly the "KSR" decision therein are noted. The requirements of an obviousness rejection are met by the rejection of paragraph 9(B) above. for the reasons stated therein and in this paragraph.

Appellant's arguments relating to the Wang reference alone are rebutted in paragraphs 9(B) above and 10(A) above and the statements of these paragraphs are repeated here. Furthermore, arguments relating to secondary references do not apply to the rejection of paragraph 9(B) above.

The reasons why the ordinary skilled artisan would use the instantly claimed combinations of ingredients from the disclosure of Wang are because Wang sets forth the use of these components in thermal inkjet printing of non-porous substrates as noted in paragraphs 9(B) and 10(A) above and the ordinary skilled artisan would have expected the instantly claimed combinations of ingredients to give the properties described by Wang and the properties known to be attributable to the individual components themselves, as discussed above regarding acid

functional polymers and encapsulated pigments. Again, acid functional monomer in the instantly claimed amount is anticipated by Wang because the amount is preferred and the acid monomer is first listed of a relatively small group of monomers. There is no showing of unexpected results over the disclosure of Wang in a manner commensurate in scope with the cited prior art and the instant claims. The ordinary skilled artisan would have expected good rub resistance, good waterfastness, lightfastness, abrasion resistance, good adhesion to non-absorbing substrates and other improved properties of Wang from the instantly claimed combinations of ingredients disclosed by Wang because Wang states that these ingredients may be used in their compositions, does not exclude the instantly claimed combinations of ingredients, and discloses that their inks have the above discussed properties noted by the appellant. This meets the requirements of a prima facie case of obviousness without use of improper hindsight because it relies solely on the disclosure of Wang without need for that of the appellant's because all of the instantly claimed components are disclosed by Wang for use in Wang's inks, including in the instantly claimed combinations. Thus, the ordinary skilled artisan would have expected the instantly claimed inventions, which are encompassed by Wang as noted above, to give the properties discussed by Wang and noted by the appellant. Wang is the motivation for this, not the appellant's specification. The expectation of success and other requirements of the KSR decision cited in MPEP 2141 are clearly met by the above rejection of paragraph 9(B). Again, the apparent reason to use the instantly claimed components together is because they are each disclosed by Wang, in relatively small lists of components, e.g. encapsulated pigment and acid functional polymer, for use in the inks and printing methods and systems of Wang, which fall

within the scope of those of the instant claims. They are expected to work properly and to give the properties disclosed by Wang and noted by the appellant.

Claims 41-44 are inherently encompassed by Wang, as noted in paragraphs 9(B) and 10(A) above. See MPEP 2112. The requirements of the case law cited by the appellant regarding inherency is met for the reasons stated above regarding inherency of the limitations of the instant claims 41-44 in the polymers of Wang. Again there is not probative evidence to the contrary. Arguments that the examiner was not relying on inherency were clearly directed to the appellant's prior arguments that the examiner's statements regarding use of the instantly claimed encapsulated pigment and acid functional polymer from the disclosure of Wang used "inherency". The examiner's statements regarding use of the instantly claimed encapsulated pigment and acid functional polymer from the disclosure of Wang per se do not use inherency. The properties of the instant claims 41-44 were clearly stated to be inherent in the polymer of Wang, as discussed above. Appellant's arguments that the examiner argued that he did not use inherency regarding the properties of the instant claims 41-44 do not meet the above stated rejection because they are an incorrect characterization of the above stated rejection in paragraph 9(B).

Arguments relating to the instant claims 13-14 and 27-28 as requiring non-volatile solvent ignores MPEP 2173.05(c), particularly "Some terms have been determined to have the following meanings in the factual situations

of the reported cases: the term "up to" includes zero as a lower limit, *In re Mochel*, 470 F.2d 638, 176 USPQ 194 (CCPA 1974); and "a moisture content of not more than 70% by weight" reads on dry material, *Ex parte Khusid*, 174 USPQ 59 (Bd. App.

1971),” which situations are analogous to the instant claim language “comprises a non-volatile co-solvent in an amount of no more than ...”, which is correctly interpreted as encompassing 0% of the non-volatile co-solvent. The appellant’s arguments in this regard are therefore not correct. The appellant’s interpretation of “comprises” or “further comprises” is inconsistent with the case law on this issue.

The rejection of paragraph 9(B) above should therefore be affirmed.

C. The following is in response to appellant’s arguments regarding the rejection of paragraph 9(C) above:

Examiner’s arguments of paragraphs 10(A) and 10(B) relating to the disclosure of Wang are repeated herein.

Appellant’s arguments to “Miyabashi” are taken as referring to “Miyabayashi”.

Appellant’s arguments relating to Miyabayashi alone does not address the rejection of paragraph 9(C) above because this rejection is based on the combined teachings of Wang and Miyabayashi, not Miyabayashi alone. See MPEP 707.07(f) “Unpersuasive Argument: Arguing Against References Individually

In response to applicant’s arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).”

The appellant does not argue with the stated reason Miyabayashi is cited, e.g. to state that the amount of crosslinking of the instant claims 18 and 32 would have been obvious in view of the teaching to crosslink of Wang and the amount thereof of Miyabayashi. Appellant’s

arguments that Miyabayashi does not correct the deficiencies of Wang is disagreed with relating to the stated purpose Miyabayashi is cited.

The rejection of paragraph 9(C) above should therefore be affirmed.

D. The following is in response to appellant's arguments regarding the rejection of paragraph 9(D) above:

The appellant argues that thermal ink jet architecture often requires additional consideration and experimentation. The disclosure of Kubota is silent regarding the particulars of the ink jet print head. It certainly does not teach away from thermal print heads. There is no reason seen why the ink of Kubota would not have been expected to function in thermal ink jet heads particularly considering its similarities to the inks of Moffatt and Kato. "May" of Kato, column 26, lines 25-28 indicates that such modification is not necessarily required and the disclosure of Kato indicates that it is within the ability of the ordinary skilled artisan to make the requisite modifications although it is not seen that such modifications are required of the inks of Kubota. Moffatt provides further motivation to use thermal ink jet head as that of Kubota, which again, does not exclude such a print head. The argument that there is not motivation to use the ink of Kubota with a thermal inkjet head ignores the motivation cited in paragraph 9(D) above.

The appellant's argument that the examiner argued it would have been obvious to use the ink of Kubota in a thermal inkjet head because it is the same ink as the applicant's ignores the actual rejection of paragraph 9(D) above. Arguments by the appellant in this regard are therefore incorrect because they ignore the actual rejection made above.

The above argument that Kubota does not teach the type of printhead is true. The examiner maintains that this is clear evidence that Kubota intended to encompass all well known

printhead types those being thermal print heads and piezo printheads. Appellant's arguments that this logic is flawed is not supported by evidence. The examiner therefore maintains this aspect of the above rejection for the reasons stated above. The appellant's argument in this regard is not supported by the disclosures of the primary reference, which does not teach away from using thermal ink jet heads, nor the secondary references which give no indication that the compositions of Kubota would not be useful for inkjet printing with thermal inkjet heads. This contradicts the appellant's statements of what the skilled artisan would know/expect regarding using thermal inkjet heads with the inks of Kubota. This also provides the reason to expect that the ink of Kubota discussed above can be successfully printed with a thermal inkjet head and obtain the benefits thereof taught by Moffatt or Kato as cited above. While Kato may establish that not every ink is thermal inkjet head printable, it does not establish this of the ink of Kubota, which does not teach away from using thermal inkjet heads, and it shows that the modifications required to make an ink printable with thermal inkjet heads are within the ability of the skilled artisan to make. Moffatt is also cited in this regard.

Stated failures of Kubota regarding the ink components are rebutted by the clear teachings of Kubota cited in paragraph 9(D) above. There is no reason seen that encapsulated pigments would be any more negatively affected by thermal inkjet head printing than other pigments, including the various organic pigments, and the polymer latex and dispersants present in the ink that is expected to encapsulate the pigment.

The argument that Kato does not teach each and every element ignores its stated purpose in the rejection of paragraph 9(D) above. The case law regarding this argument against Kato

alone is cited above and repeated herein. The appellant again ignores the teachings of Moffatt in this regard also.

There is not showing of unexpected results stemming from one of the primary means of inkjet printing, e.g. using a thermal inkjet head, with the instantly claimed ink in the instantly claimed inventions in a manner commensurate in scope with the cited prior art and the instant claims.

The limitations of the instant claims 41-44 are expected to be necessarily inherent in the polymers of Kubota for the reasons stated above, e.g. their similarities to the instantly claimed polymers and the relatively broad ranges of the instant claims 41-44. See MPEP 2112. There is no probative evidence to the contrary. The argued case law regarding inherency is noted and the requirements thereof met in the rejection of paragraph 9(D) above.

The interpretation of the instant claims 13-14 and 27-28 as reading on 0 is maintained for the reasons stated above.

The rejection of paragraph 9(D) above should therefore be affirmed.

E. The following is in response to appellant's arguments regarding the rejection of paragraph 9(E) above:

To the extent that the appellant argues the rejection of paragraph 9(E) above the same as for the rejection of paragraph 9(D) above, this rejection is repeated for the same reasons stated in paragraphs 9(D), 9(E), and 10(D) above.

The appellant's arguments regarding Miyamoto and Wang separately in regard to this rejection do not address the above rejection, which is based on the combination of the references, not their separate use. The case law in this regard is cited above.

The rejection of paragraph 9(E) above should therefore be affirmed.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Patrick Niland/
Primary Examiner
GAU 1796

Conferees:

/David Wu/
Supervisory Patent Examiner, Art Unit 1796

/Gregory L Mills/
Supervisory Patent Examiner, Art Unit 1700